DOCUMENT RESUME

ED 093 767 SO 007 621

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TITLE Behavioral Change as a Result of Videotaped Playback: An Examination of Two Models.
PUB DATE 72
NOTE 29p.; Paper presented to the American Educational Research Association (Chicago, April 1972)

EDRS PRICE MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS Behavioral Science Research; *Behavior Change; Behavior Patterns; *Feedback; *Learning Theories; Literature Reviews; Locus of Control; Models; Reinforcement; Research Design; Social Studies; *Video Tape Recordings

ABSTRACT

The literature on the behavior effects of videotaped playback reveals that little theoretical formulation has been offered to explain the positive results which have been reported. Two theoretical models are considered in regard to these results. The first, a reinforcement model, suggests that some behaviors are reinforced positively and some negatively during playback. The second model, derived from an attribution theory, suggests that videotaped playback introduces the perceptual bias of observers to the actor and augments his belief in personal causality. The two models make different predictions about the effects of playback over time. The reinforcement model predicts that the modification of behavior should increase as the number of playbacks increases. The attribution model predicts an inverse relationship between exposure to playback and behavior change. These predictions were tested using small groups of elementary school children in social studies classes. Results indicated support for the attribution model for direct playback conditions and for the reinforcement model for vicarious (viewing of another group) playback conditions. Implications for both theory and practice are discussed. (Author/KSM)

BEHAVIORAL CHANGE AS A RESULT OF VIDEOTAPED PLAYBACK: AN EXAMINATION OF TWO MODELS[1]

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Abstract

The literature on the behavioral effects of videotaped playback reveals that little by way of theoretical formulation has been offered to explain the proliferation of positive results which are reported. Two possible theoretical models were considered. The first, a reinforcement model, suggests that some behaviors are positively reinforced and some negatively reinforced during playback. The second model, derived from attribution theory, suggests that concomitant with the shift in role from actor to observer, videotaped playback introduces the perceptual bias typical to observers (Jones and Nisbett, 1971) and thereby serves to augment belief in personal causality. These two models make clearly different predictions about the effects of playback over time. Specifically, the reinforcement model predicts that the modification of behavior should increase as a direct function of the number of playback treatments. Since change violates the consistency criterion for personal attributions (Kelley, 1967), the attribution model would predict an inverse relationship between exposure to playback and behavior change. These opposing predictions were tested using small groups of elementary school children. The results indicated that the attribution model was supported for direct playback conditions while the reinforcement predictions prevailed for vicarious playback conditions. The results are discussed in terms of their implications for both theory and practice.

It is possible to classify the reported uses of VTP to date in one of the following three areas: 1.) counseling and psychotherapy, 2.) counselor and teacher education, and 3.) psychomotor training (see Braucht, 1970; Holzman, 1970; and Baker, 1970 for reviews). Most of the studies have been conducted since 1960 and, with few exceptions, have been anecdotal and impressionistic accounts of the authors' experience with VTP. In many cases, control groups were inadequate or nonexistent. However, most of these studies have reported the technique to have produced marked changes in behavior.

TWO MODELS OF VIDEOTAPED PLAYBACK

Two theoretical models of the VTP process can be proposed, both of which would appear to adequately account for the consistently positive findings reported in the literature. However, on closer inspection it becomes apparent that these two models generate distinctively discrepant predictions and have different implications for application of the technique.

The reinforcement model. The notion of feedback as reinforcement appears to be most amenable to the literature on self confrontation. It underlies the traditional learning

theories of Thorndike, Hull and Skinner and some variations of the reinforcement model have incorporated recent advances in modeling (cf. Bandura, 1969). A prime example of a reinforcement model interpretation of the effects of VTP is Stoller's (1969) formulation of discrepant and nondiscrepant feedback. When a person receives nondiscrepant feedback he sees that his behavior has elicited, from other people, the kinds of response he anticipated. Thus nondiscrepant feedback is positively reinforcing and increases the probability that the person will continue to exhibit the behavior. When a person views playback on which the responses he elicits vis a vis others are incongruent with what he had anticipated, he is receiving discrepant feedback. Discrepant feedback is negatively reinforcing and tends to extinguish the behavior that produced it.

Similarly, Braucht (1970) found no difference in the average amount of change in self esteem between patients who received the VTP treatment and control patients who did not receive the treatment. However, there were significant differences in the variability of changes, such that the distribution of experimental patients' change scores was greater than the distribution of control patients' change scores. This "Deterioration Effect" (i.e., some experimental subjects increased in self esteem while others decreased may be due to the fact that, for some patients, the playback experience is predominately positively reinforcing (or nondiscre-

pant), while for others, VTP may be mostly aversive (or discrepant).

The attribution model. Attribution refers to the process of inferring the dispositional properties of entities in the environment. Much of the current state of attribution theory stems from the rich thinking of Fritz Heider (1958) who first described the processes by which the individual makes attributionsabout his world -- attributions of causes, dispositions, and inherent properties. There are two fundamental directions which this causal analysis can take: 1.) in person perception where the observer is searching for person-caused variance (that caused by the particular actor uner scrutiny) and in so doing he must rule out environmental or situation-determined causes of variations in effects, or 2.) where a person is concerned about the validity of his own attributions regarding the environment and applies several criteria in an attempt to rule out self-based sources of "error" variance. These two directions can be viewed as being at opposite ends of a person-environment dimension and have been treated, in depth, by Jones and Davis (1965) and Kelley (1967) respectively.

Heider regarded the perceptual process as an arc which begins with the real object (distal stimulus) and ends with the percept (proximal object), the object as experienced. The distal stimulus does not impinge directly upon the sense organs. Rather, it is conveyed through and

by a medium to the perceiver. For example, in auditory perception a sound is mediated by sound-wave patterns that excite the person's auditory receptors. Since the sound-waves, like the distal stimulus, are outside of the person, they may be called "distal mediators." The pattern which the distal mediator transmits impinges on the perceiver's sense organs and becomes the "proximal stimulus is transmitted via nerve pathways (proximal mediators) to the brain where the perceptual arc terminates in the "proximal object" or percept.

Heider also applies this causal analysis to person perception.

> "The other person, with his psychological processes such as needs and intentions functions as the distal stimulus. He is the "object" toward which p's perception is directed. The mediation consists of the manifestations of the personality of the other, as they determine the proximal stimulus pattern. Often the manifestations of o's inner psychological processes are behavioral though may be data gained from other sources, such as verbal communication from a third person. Finally, there is the perceptual construction within the person that leads from this raw material to the awareness of the other"(1958, p. 24).

Let us consider for a moment the implication from the above quote that, when one listens to a speaker, the distal stimulus is the personality of the speaker. Some recent reviews (e.g. Mischel, 1968; 1971; and Peterson, 1968) have created some doubt as to whether personality is such a pervasive causal agent. But as Heider noted, people are, in general, naive psychologists who jump quickly from act to internalized disposition. This phenomenon is what Heider termed "egocentric attribution," the tendency for a person to attribute

his own reactions to an entity, to inherent properties of the entity.

> "Attribution to the object ... means more than the dependence of p's pleasure on the object. It also means that there is something enjoyable about the object. The attractiveness is a quality of the object, just as in the sweetness of a fruit or the roughness of a terrain."

Recently, Jones and Nisbett (1971) have offered some intriguing research which suggests that, "There is a pervasive tendency for actors to attribute their actions to situational requirements, whereas observers tend to attribute the same actions to stable personal dispositions" (p.2). Mischel (1971) has rephrased this as: "We function like trait theorists when analyzing other people, but more like social behaviorists when we try to understand ourselves" (1971, p. 21).

It is now possible to propose that the VTP process is one in which the person himself becomes the distal stimulus. However, as compared with ordinary self analysis, VTP introduces some important changes in the perceptual arc. For example, when one hears a recording of his own voice he is not only minus the extra advantage of bone conduction as a distal mediator, but is also without the many proprioceptive cues that we normally receive from our expressive gestures, mannerisms and postures. These changes in distal mediators tend to alter the perception of the distal stimulus (self) from what is spontaneously experienced.

Holzman (1970) has suggested that the processes of self-confrontation also alters the experience at the proximal

end of the perceptual arc. For example, although we constantly hear our voices when we speak, we have to some extent learned to ignore them automatically; concentrating, rather, on the intention of the communic ation. Listening to one's recorded voice, on the other hand, "deautomatizes" inattention to one's voice and transforms the proximal stimuli into information about the voice and the person himself. Rather than a mediator of expression, the voice as percept allows one to evaluate it in light of previous experience with voices and make judgments about the personal dispositions of its author. Likewise with VTP all the overt behavior and paralanguage and more subtle kinesics are distal mediators full of information about the distal stimulus, the person or "personality" responsible.

In terms of an attribution model, the VTP process is one in which the subject experiences a metamorphosis from actor to observer, from social behaviorist to trait theorist. He becomes not only "deautomatized" to the intracacies of his communication, but also becomes more susceptible to the egocentric tendency of attributing causality to personal dispositions of the actor who, through some bizarre technological twist, is himself. This may be why VTP has been so effective in modifying self esteem (cf. Braucht, 1970). Since the person is now more likely to attribute his behavior to stable dispositions, these behaviors become more salient for self-evaluations than they would be if they could be explained by

properties of the situation. But more important, when a person believes that the behaviors he sees himself emitting are internally caused, he should be motivated to modify those behaviors if they are not entirely appropriate. From an attribution theory viewpoint, therefore, the effectiveness of VTP lies in its ability to enhance motivation by increasing belief in personal causality.

Internal vs. external control: a divergence of predictions. According to the law of effect, any response followed by a reward should be strengthened and any response followed by punishment should be weakened. A reinforcement model of VTP would therefore predict modification of behavior to follow something akin to the negatively accelerated learning curves common to operant conditioning (cf. Hilgard and Bower, 1966). In contrast, the "rules" of attribution theory conforms to a different principle -- something akin to a law of "anti effect." Attributions of personal causality are less likely to occur when there are external factors (i.e., rewards and punishments) which affect the behavior in question (Jones and Davis, 1965; Kelley, 1967). Kelley (1971) has stated this phenomenon more generally as the discounting principle: "the role of a given cause in producing a given effect is discounted if other plausible causes are present" (p.8). The importance of VTP in an attribution interpretation is the procedures facility in eliciting personal attributions from subjects. In such a model reinforcement would serve to attenuate belief in

personal causality since the subject would presumably have an external reason to explain his behavior and motivation to modify his own behavior should be limited.

An example from a related situation is Bem's (1967) reinterpretation of the classic Festinger and Carlsmith (1959) dissonance study. Subjects spent and hour participating in a very dull and boring task and were then asked to tell an alleged subject that the experiment was actually quite interesting, and for this duplicity they were offered either $1.00 or $20.00. Later when the subjects were asked their true attitudes about the task, it was found that subjects who were paid the least said they found the experimental tasks more interesting. Of course, Festinger and Carlsmith explained the obtained inverse relationship between incentive magnitude and favorability ratings by the theory of cognitive dissonance. Bem (1967), borrowing the behavioristic language developed by Skinner (1957), suggested that the subjects who were paid $20.00 perceived their duplicity to be caused by external pressure (i.e., the large reward) and hence considered their actions to be "manded." The $1.00 subjects on the other hand, could find no obvious external cause for their duplicity ("tacted" behavior) and therefore could only assume that it was caused by their true attitude about the task (i.e., "I really did enjoy it").

If VTP is effective because it facilitates personal attributions of causality which, in turn, are highly motivating,

then its effectiveness should be limited to a very small number of playback sessions. Kelley (1967) stated that consistency over time is important for evoking personal attributions. The more consistent a person is, the more likely an observer will believe that the person's behavior is internally caused. Strong empirical support for this is given by McArthur (1972) who presented subjects with person-entity statements (e.g., "John laughs at the comedian") and three accompanying statements about consensus ("Almost everyone who hears the comedian laughs at him"), distinctiveness, ("John does not laugh at almost any other comedian") and consistency (In the past John has almost never laughed at the same comedian"). For each set of information the subject was instructed to determine what caused the event, i.e., something about the person, the entity, the circumstance or some combination of these factors. McArthur's results indicated that consistency information accounts for the most variance in person attributions.

It follows that the VTP technique's efficacy for evoking personal attributions is limited since, as the subject's behavior appears to change over VTP sessions it violates the consistency criterion. The case is one of opposing forces: although person causality implies control and the ability to modify, change implies inconsistency and therefore external control. The prediction from an attribution model would then be that the effectiveness of VTP would begin to decline after the second VTP experience, because, if a behavior change has occurred, inconsistency information has been introduced.

However, it is conceivable that an additional variable, i.e. intentionality, may moderate the significance of consistency information. More specifically, behavior change following VTP might not seem inconsistent to the viewer if he attributes the change to his own intention to change ("I saw what was wrong and did something about it"). Unfortunately, it is doubtful that the typical VTP procedures employed by clinicians and educators permit subjects to feel that they intend any behavior change that might occur. Even when the playback procedure is left as open-ended as possible, subjects are at least given instructions to focus on certain behaviors and consider how they can be improved From the perspective of the subject the procedure is one in which an outside agent (i.e., researcher, clinician, teacher, etc.) attempts to modify behavior. In the argot of attribution theory, there is a sufficient external justification for any subsequent behavior change and therefore personal intentionality can be discounted. If the VTP procedure is viewed as a direct manipulative attempt, the individual may even react against the threat to his freedom by becoming intractable or even changing in inappropriate ways (cf. Brehm, 1966).

A second divergence of predictions between, reinforcement and attribution models springs from the use of vicarious playback. Vicarious playback occurs when an individual or group views the recorded activities of some other individual or group. A reinforcement model would predict that vicarious

playback would be effective in modifying behavior since it has been established that complex social behavior can be acquired almost entirely through imitiation (cf. Bandura and Walters, 1963).[2]

The attribution model, on the other hand, would predict that vicarious playback should not be effective in modifying behavior. Since the individual would be viewing someone else, his attributions of that actor should have little significance on his own behavior. The vicarious playback situation should be no different than ordinary observations of some other actor for increasing belief in personal control.

Practical Significance

Both the reinforcement and the attribution model offer advantages and disadvantages for the practical use of VTP. The great advantage of the reinforcement model is that an entire group (e.g. classroom or therapy) can benefit from watching any playback because of vicarious learning. This is especially important in light of the fact that VTP is a time consuming process and unless a clinic or school was fortunate enough to have a number of video-tape units, the time required to give each client or student VTP of his own behavior would be prohibitive. Although the attribution model, on the other hand, limits the effectiveness of VTP to direct playback, it predicts that a single playback session would be most effective. Also, if VTP is effective because it

increases motivation, its effects should generalize to behaviors other than those viewed on playback.

An integral part of the present study is concerned with the effects of VTP across two playback sessions. If positive effects (if any) follow a linear trend, the reinforcement prediction would be supported. If positive effects taper off following the second playback and begin to approximate a quadratic effect, the attribution prediction would be supported. An equally important concern is determination of the effects of vicarious playback. The discrepancy in the predictions that the two models generate has important implications for the felicitous design and use of the VTP technique. For this reason, it is the aim of this investigation to shed some light on the relative validity of the two models.

METHOD

Sample

This study was conducted in five fifth-grade and five sixth-grade social studies classes from five elementary schools in the Ithaca Central School District. Teachers were instructed to randomly divide their classes into small groups with five or six students in each group. The teachers were then given short-term curriculum units entilte d "Materials and Activities for Teachers and Children" (MATCH), which they agreed to use everyday for a three-week period. MATCH kits are designed for small group work relatively independent of

the teacher (Kresse, 1969). Rich in interesting materials, the MATCH kits produce a wide range of overt behaviors and interpersonal interaction which can be easily captured on videotape. For this reason, groups were used as the unit of analysis. Two groups from each of the ten classes were selected for analysis and , hence, the total N for this investigation was 20 groups.

Procedure

Each group in this investigation was video-taped at four different points in time for a ten-minute interval during each observation. For the first video-taping, or Pretest, all groups were given an identical problem to solve with "pattern blocks." The second videotaping, or Time 1 observation, was the second MATCH session for all groups. For the third taping, or Time 2 observation, each group was involved in one of the final MATCH activities. For the final observation, or Post-Test, each group was given an anagram problem to solve. An interval of 7 to 9 days separated each video recording. Only the Time 1 and Time 2 recordings were used for VTP.

The following three experimental treatments were used in this investigation:

1.) Playback. One group from each of the ten classes in the study was randomly selected to receive VTP. All groups in the Playback (P) condition viewed the videotape of their group session during the class period immediately

following it.

2.) Vicarious Playback. One group from each of five classes was randomly selected to serve in the Vicarious Playback (VP) condition. These five VP groups were present at the VTP of the groups (P) in their respective classes who received playback. Thus although the VP groups received playback, the playback was that of another groups session.

Control. In each of the remaining five classes where no VP groups were chosen, a group was randomly selected to serve as a control. The five control groups at no time received VTP, neither of their own group directly nor, vicariously, of another group.

Two judges rated the videotapes of all groups across all occasions on the following dimensions:

1.) Participation. Each unit of verbal participation was categorized as either task or non-task directed. A unit of verbal participation was operationally defined as "A communicaton or indication sufficiently complete to permit the other person to interpret it, and so react in relation to its content and to the speaker" (Bales, 1970, p. 68).

2.) A rating scale was developed to assess the quality of group work. The scale consisted of 20 questions which were developed from value positions of student-centered learning (Cole, 1970). The six dimensions were: 1.) Attending/Participating, 2.) Cooperating/Sharing, 3.) Agression/Non-Aggression, 4.) Manipulation/Non-Manipulation of Materials,

5.) Independence/Self-Directed, and 6.) Emotional Climate. Each question was written as a five-point Likert scale on which "5" represented the highest score on the positive end of the dimension and "1" represented the lowest score on the negative end of the dimensions in question.

In addition, alternate forms of nine scales of the California Test of Personality (Thorpe et al., 1953) were given as Pre- and Post-Tests. The following scales of the CTP were used: 1.) Self-Reliance, 2.) Sense of Personal Worth, 3.) Sense of Personal Freedom, 4.) Feeling of Belonging, 5.) Withdrawing Tendencies, 6.) Social Standards, 7.) Social Skills, 8.) Anti-Social Tendencies, 9.) School Relations.

RESULTS

The percent of task-directed participation and mean quality ratings (the average of the six rating-scale dimensions) for Treatment Group by Observation are plotted in Figures 1 and 2 respectively. Both graphs show a slight decline for all conditions from the Pretest to the Time 1 observation. This may be due to a "Hawthorne Effect" during the Pretest resulting from the intrusion of the videotape equipment in the classroom.

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insert Figures 1 and 2 about here

Mixed-model assumptions were adopted and a repeated measures analysis of variance was computed with the factors:

Treatment Group by Group Within Treatment by Occasions (Bock, 1972). Since each of the six rating scale dimensions behaved identically to the mean quality rating, only the statistics for the latter will be reported here. The results of the analysis of variance for the percent of task directed participation and mean quality ratings are reported in Tables 1 and 2 respectively. For both variables, a significant Treatment Group by Observation interaction was found indicating that the curves are not parallel.

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insert Tables 1 and 2 about here

An orthogonal polynomial trend analysis for percent of task-directed participation across the Time 1, 2 and Post-Test observations shows a significant quadratic effect for Playback group ($F = 4.888$, $p < 0.03$), but not for the Vicarious group or the Control group ($F < 1$). A trend analysis of the mean quality rating shows the Playback group approaching a significant quadratic effect ($F = 3.39$, $p < 0.07$) while the Vicarious group does not ($F < 1$). The mean quality rating quadratic effect for the Control group is significant ($F = 9.877$, $p < 0.003$), and is probably due to the remarkably high score for the control group at Time 2 (see Fig. 2). A check of the raw data indicated that one of the Control groups received perfect scores (5's) on all dimensions of the rating scale during the Time 2 observation (clearly a foible of the small sample). This probably also accounts for the significant

Observation and Group Within Treatment F's reported in Table 2.

The behavior of the playback curve for both task-directed participation and quality shows the greatest gains following the initial VTP session with little gain or loss subsequent to the second VTP session. These findings are supportive of the attribution model for VTP. However, the Vicarious Playback curve shows a steady increase across both VTP sessions and indicates support for the reinforcement model. That the two treatments support different predictions is also indicated by t-tests computed on the Time 2 and Post-Test observation. For the percent of task-directed participation, the Playback group is significantly higher than both Vicarious and Control groups at Time 2 ($t = 3.435$ and 3.721, $p < 0.01$) while both the Playback and Vicarious groups are higher than the Control group at the Post-Test ($t = 2.131$ and 2.817, $p < 0.05$). Likewise, for the mean quality rating, the Playback group is significantly higher than both Vicarious and Control groups at Time 2 ($t = 1.894$ and 2.251, $p < 0.05$) although at the Post-Test only the Playback group was significantly different from the Control group ($t = 1.935$, $p < 0.05$). These results suggest that the attribution explanation is valid for direct playback, while the reinforcement explanation holds for vicarious playback.

An analysis of covariance was computed on the Post-Test CTP scores with Pretest scores as the covariates. The two degree of freedom F's for a Treatment Group main effect are

reported in Table 3. Seven of the nine scales show a significant effect. These F's are broken down into single degree of freedom tests (see Table 4) by use of Helmert contrasts (Bock, 1972) which allow a comparison of the Playback group vs. the pooled variance of the Vicarious and Control groups as well as a Vicarious vs. Control comparison. The only significant Playback vs. Vicarious plus Control contrast occurs for the subtest "Self Reliance." A t-test on the means for the Playback and Vicarious groups (8.49 and 7.35 respectively) is significant ($t = 1.972$, $p < 0.05$). The Vicarious vs. Control comparisons are all significant with the mean of the Vicarious group being the greater in every case. The significant difference found between the Playback and Vicarious groups on the Self Reliance scale gives support to the notion that direct playback enhances belief in personal causality.

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insert Tables 3 and 4 about here

DISCUSSION

In general, the results show some support for the hypothesis that VTP can be used effectively in a classroom. Both direct and vicarious playback enhanced task-directed participation in small groups and direct playback produced a higher quality of group interaction. VTP also seemed to produce a positive movement on several personality dimensions.

The attempt to determine whether a reinforcement model or an attribution model best accounts for the effects of VTP suggests an intriguing model by method interaction. When an individual confronts himself on the monitor, it appears that a reversal of actor-observer role may occur. In the present study, self-confrontation produced large and immediate changes in behavior which were predicted by the attribution model. Vicarious playback, on the other hand, produced a more steady modification of behavior. The one personality dimension which distinguished direct from vicarious playback groups, Self Reliance, gives further support to a two-model theory of VTP.

The present study suggests further research on three levels. First of all, more work is needed to determine the most effective VTP procedures. The implication from the data presented here is that minimal self-confrontation is most effective while vicarious playback should be more frequent. Research with varying schedules of playback, both direct and vicarious is needed to clarify that implication. In a similar view, work on the temporal effects of self-confrontation would be most welcome. Is there a period of enhanced motivation following self-confrontation? If so, knowledge of it would enable educators and therapists to develop optimal schedules of VTP.

The second level where research is needed is that of individual differences. Is VTP more effective with certain

kinds of individuals than with others? In this study, belief in personal causality was considered a dependent variable -- a result of self-confrontation. Perhaps, however, VTP is more effective for individuals who have a generalized belief in external control since the role reversal involved in self-confrontation would be more salient for those people. A promising operationalization of belief in personal causality is Rotter's (1966) Internal-External scale.[3]

Finally, further investigation on the VTP process may provide insights into the process of the perception of causality in general. Is the tendency for an observer to attribute dispositions and intentions to an actor a learned phenomenon, a perceptual idiosyncracy of the human organism; or both? To what extent is the labeling of one's percept ons important for subsequent attributions? Could the modification of the playback technique to include a commentary prepared by the experimenter, which would emphasize elements of either internal or external causality, have a substantial effect above and beyond VTP without commentary? The processes of video-taped playback would appear to be a potentially fruitful avenue for systematic research both in terms of its efficacy as a therapeutic and educational technique, and as a vehicle for studying the more basic processes of perception and cognition. As Robert Burns commented over two hundred years ago, "Oh, war some Power the giftie gie us, to see oursels as ithers see us."

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FOOTNOTES

1 Paper presented at: American Educational Research Association, Chicago, Illinois, April 1972.

2 It should be noted that reinforcement is not crucial to imitation learning (Bandura, 1962; 1965). Rather, reinforcement does seem to be required for the "performance of imitatively learned responses." Since the present concern is the efficacy of vicarious playback in modifying "performance" the rubric "reinforcement" model will continue to be used.

3 Pretesting indicated that the I-E scale was inappropriate for the present sample.

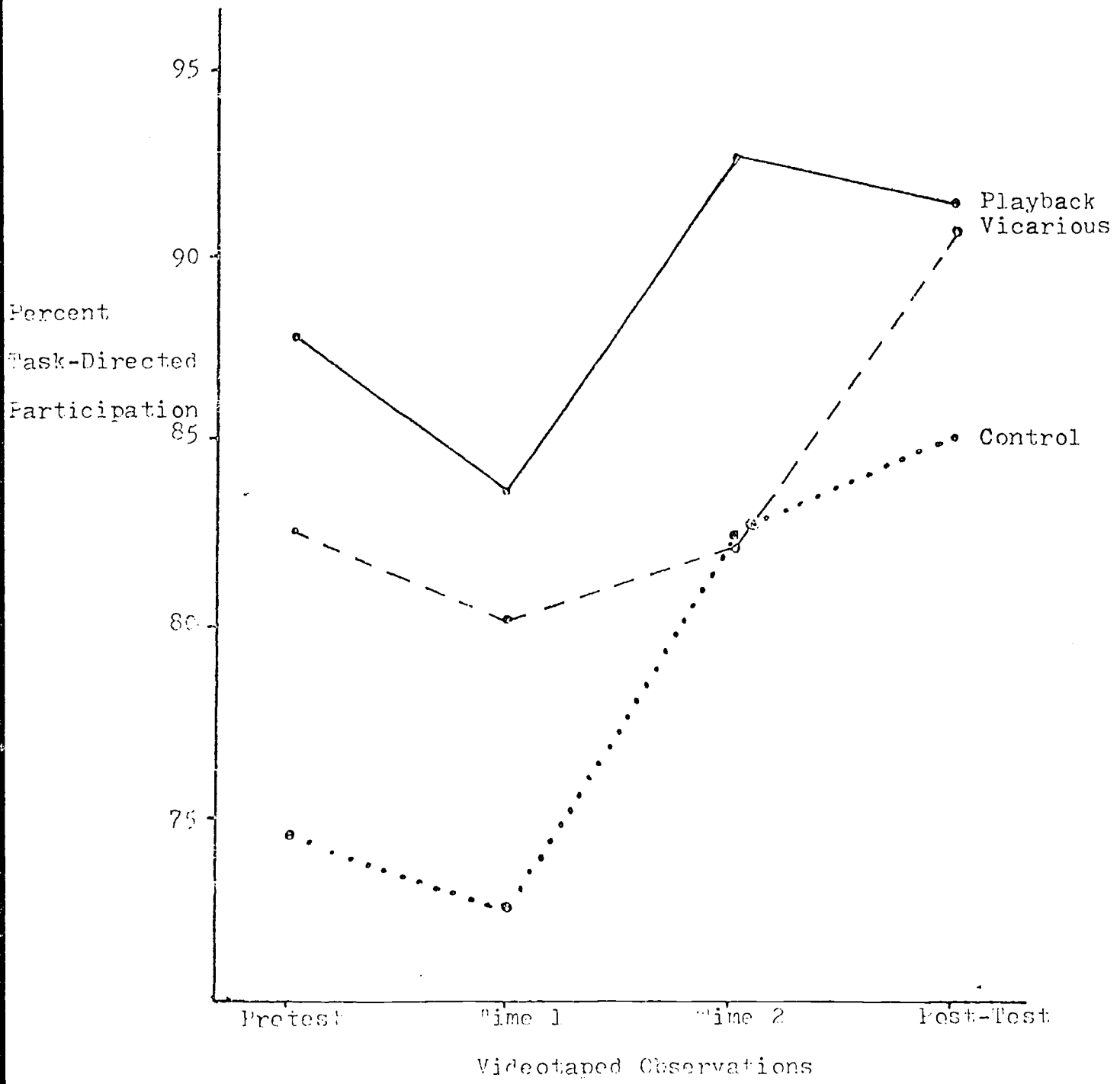

Fig. 1. Percent of task-directed participation over time.

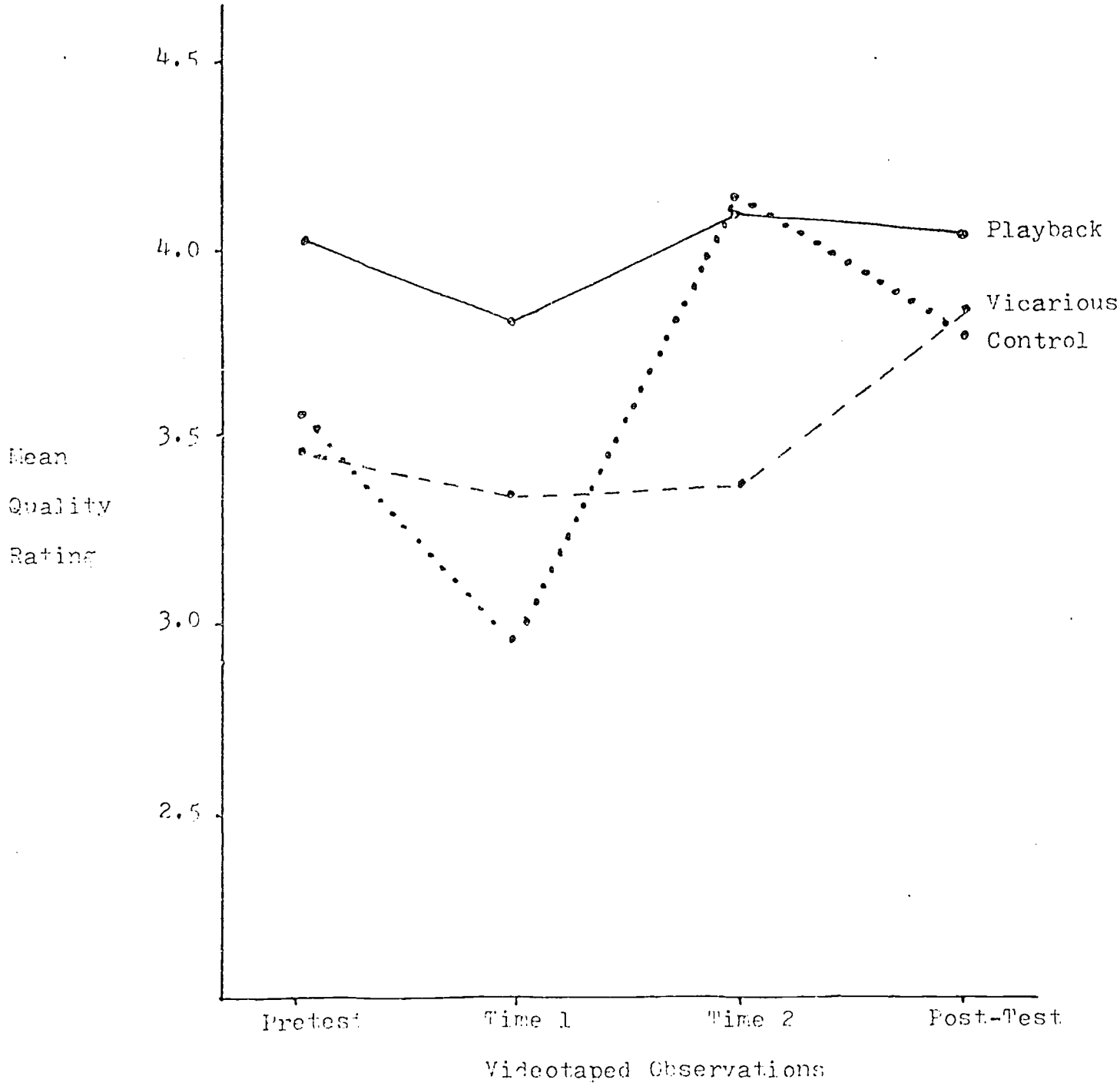

Fig. 2. Mean quality rating over time.

TABLE 1

REPEATED-MEASURES ANALYSIS OF VARIANCE
FOR PERCENT OF TASK DIRECTED PARTICIPATION

Sources	df	F	p
Treatments	2	0.722	0.468
Observations	3	1.921	0.138
Groups Within Treatments	17	1.640	0.089
Treatment by Observation Interaction	6	4.987	0.023

TABLE 2

REPEATED-MEASURES ANALYSIS OF VARIANCE
FOR MEAN QUALITY RATING

Sources	df	F	p
Treatments	2	0.474	0.630
Observations	3	4.039	0.012
Groups Within Treatments	17	4.331	0.001
Treatment by Observation Interaction	6	2.441	0.038

TABLE 3

ANALYSIS OF COVARIANCE FOR CALIFORNIA TEST OF PERSONALITY

Source	df	F	p
Treatment Group Main effect	2	24.838	0.003
1) Self Reliance		6.604	0.032
2) Sense of Personal Worth		12.599	0.002
3) Sense of Personal Freedom		9.720	0.005
4) Feeling of Belonging		7.514	0.010
5) Withdrawing Tendencies		11.712	0.002
6) Social Students		0.768	0.490
7) Social Skills		0.829	0.464
8) Anti-Social Tendencies		6.581	0.015
9) School Relations		4.929	0.015

TABLE 4

ANALYSIS OF COVARIANCE FOR PLAYBACK vs. VICARIOUS PLUS CONTROL CONTRAST ON CALIFORNIA TEST OF PERSONALITY

Source	df	F	p
Playback vs. Vicarious + Control	1	50.593	0.196
1) Self Reliance		5.419	0.042
2) Sense of Personal Worth		0.420	0.532
3) Sense of Personal Freedom		0.256	0.624
4) Feeling of Belonging		2.282	0.162
5) Withdrawing Tendencies		0.688	0.426
8) Anti-Social Tendencies		1.214	0.296
9) School Relations		1.509	0.248